

REMARKS

The Examiner objected to the response filed on July 18, 2003 as being not fully responsive to the prior Office Action, stating that arguments relating to the patentability of newly presented claims 150-161 were not presented as required by 37 C.F.R. 1.111. These arguments are presented immediately hereinafter for consideration by the Examiner.

New Claims 150-161

New claim 150 sets forth a method for use in a system in which a boring tool is moved through the ground in a region. The system includes a locator at least for tracking the position of the boring tool as the boring tool moves through the ground. The method includes transmitting a locating signal from the boring tool using a transmitter that is selectively operable at a current one of at least two operating frequencies for use in locating the boring tool by receiving the current operating frequency with the locator. Further, the transmitter is configured in a way which causes the locator to respond dynamically to a change of the current one of the operating frequencies, as the transmitter is selectively switched between the two operating frequencies, such that the locator tracks the current operating frequency. It is submitted that the art of record is devoid of these features in any reasonable combination. In particular, transmitter 100 of Rider I is configured for simultaneous connection to a plurality of different buried lines. The Rider I transmitter unit is not configured for underground operation. It is submitted that Rider I teaches nothing with respect to boring tools. As stated in the prior response, the Rider I transmitter (U.S. Patent no. 5,361,029) is not suited for use in a boring tool and Applicants find therein no teaching or reasonable suggestion for adapting the transmitter for such use. While the boring tool transmitter and locator of the present invention could be used to transmit and receive different locating frequencies from different boring tools, the elegance of this system and attendant method, as embraced by the limitations of claim 150, resides in the highly advantageous capability to switch locating frequencies "on-the-fly" during a drilling operation. That is, the locator responds dynamically to changes in the locating frequency with no user interactions. In this regard, Rider I fails to teach a dynamically responsive system. At col. 11, lns. 26-33, Rider I describes manual operator entry of a "desired change" (see col. 11, ln. 20) in transmitter frequency which produces a "command code" (see col. 11, ln. 29) in the carrier signal. The patent does not provide specific details with respect to these features, including the specific information that is manually entered by the operator and the contents of the command code. Such a manual system, even if it were reasonable to modify Rider I to use its transmitter in a boring tool, which Applicants do not believe, is submitted to be prone to operator errors and potential operator-induced delays. It is submitted that Rider II and Mercer contribute nothing with respect to the limitations of claim 150 since Rider II (U.S. Patent no. 5,264,795) and Mercer (U.S. Patent no. 5,337,002) are relied on merely for teaching the use of a boring tool. For at least these reasons, it is submitted that claim 150 is allowable over the art of record. Accordingly, allowance of claim 150 is respectfully requested.

Claims 151-155 are dependent claims which depend either directly or indirectly from claim 150, thereby including the limitations of claim 150. Accordingly, it is respectfully submitted that claims 151-155 are also patentable over the art of record for at least the reasons set forth above with respect to claim 150. Further, each of these dependent claims places additional limitations on their parent and intermediate claims which, when considered in light of claim 150, further distinguish the claimed invention from the art of record.

For example, claim 151 includes identifying one of the operating frequencies to the locator using a frequency code that is produced by a locating signal frequency control arrangement which forms part of the transmitter, which frequency code can individually identify each of said operating frequencies. In this regard, Rider I describes a "command code" at column 11, line 29. Applicants, however, are unable to find any description in the Rider I disclosure which states that this command code uniquely represents the transmitter frequency. For example, such a command code could merely cause the operator to toggle the receiving frequency. For at least this reason, allowance of claim 151 is respectfully requested.

As another example, claim 152 depends from claim 151 and recites that identifying indicates an identified operating frequency which is, at least initially, different from the current operating frequency at which the transmitter is currently transmitting. Claim 153 also depends from claim 151 and recites that identifying indicates an identified operating frequency which is the same as the current operating frequency at which the transmitter is currently transmitting. In this regard, it should be appreciated that the identified operating frequency can be the same as or different from the current operating frequency. Applicants are unable to find these features in the art of record. For example, it is submitted that Rider I fails to even suggest that its "command code" uniquely identifies a particular frequency.

As still another example, claim 154 recites comparing, using the locator, the current operating frequency to the identified operating frequency. Applicants find no teaching of this feature in the art of record.

As a continuing example, claim 155 depends from claim 154 and additionally recites performing one of (i) maintaining the current operating frequency if the identified operating frequency is equal to the current operating frequency and (ii) changing the current operating frequency to the identified operating frequency, as a new operating frequency, if the current operating frequency is different from the identified operating frequency. Applicants are unable to find this combination of features in the art of record, particularly in view of its dual implementation in both the locating signal control means of the transmitter and in the locator receiving means.

For at least these reasons, allowance of claims 151-155 is respectfully requested.

Claim 156 is an independent claim which reflects the limitations of claim 150, but in apparatus form. For this reason, it is considered that the arguments presented above, with respect to the patentability of claim 150 over the art of record, are equally applicable with respect to the patentability of claim 156. Accordingly, allowance of claim 156 is respectfully requested for at least this reason.

Claims 157-161 are dependent claims which depend either directly or indirectly from claim 156, thereby including the limitations of claim 156. Accordingly, it is respectfully submitted that claims 157-161 are also patentable over the art of record for at least the reasons set forth above with respect to claim 156. Further, each of these dependent claims places additional limitations on their parent and intermediate claims which, when considered in light of claim 156, further distinguish the claimed invention from the art of record.

For example, claim 157 recites that the transmitting means includes locating signal frequency control means for identifying one of the operating frequencies to the locator receiving means using a frequency code, which frequency code can individually identify each of the operating frequencies. In this regard, Rider I describes a "command code" at column 11, line

29. Applicants, however, are unable to find any description in the Rider I disclosure which states that this command code uniquely represents the transmitter frequency. For example, such a command code could merely cause the operator to toggle the receiving frequency. For at least this reason, allowance of claim 157 is respectfully requested.

As other examples, claims 158 and 159 both depend from claim 157. Claim 158 recites that the identified operating frequency is, at least initially, different from the current operating frequency, while claim 159 recites that the identified operating frequency is the same as the current operating frequency. Applicants are unable to find these features in the art of record. For example, it is submitted that Rider I fails to even suggest that its "command code" uniquely identifies a particular frequency.


As a further example, claim 160 recites that each of the locating signal frequency control means in the transmitter means and the locator receiving means are configured for comparing the current operating frequency to the identified operating frequency. Applicants respectfully submit that the art of record, in any reasonable combination, is devoid of such a comparison feature.

As a continuing example, claim 161 recites that each of the locating signal frequency control means and the locator receiving means are configured for performing one of (i) maintaining the current operating frequency if the identified operating frequency is equal to the current operating frequency and (ii) changing the current operating frequency to the identified operating frequency, as a new operating frequency, if the current operating frequency is different from the identified operating frequency. It is respectfully submitted that Rider I, in any reasonable combination with the remaining art of record, is devoid of this combination of features, particularly in view of its dual implementation, by the present invention, in the locating signal control means of the transmitter and in the receiver.

For the foregoing reasons, it is respectfully submitted that all of the Examiner's objections have been overcome and that the application is in condition for allowance. Hence, allowance of these claims and passage to issue of the application are solicited.

If the Examiner has any questions concerning this case, the Examiner is respectfully requested to contact Mike Pritzkau at 303-410-9254.

Respectfully submitted,



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